

Appln. No.: 09/610,269  
Amendment Dated November 13, 2003  
Reply to Office Action of August 14, 2003

MATI-193US

**Remarks/Arguments:**

Claims 1-17 are pending in the above identified application. Claims 1-9 and 17 are rejected. The Examiner has allowed claims 10-16. The applicant appreciates the Examiner's recognition of allowable subject matter.

The present invention is a data transmission method for transmitting data, over a network including a system controller and at least one remote terminal, utilizing unsolicited periodic grants and solicited dynamic grants. The grants originate from the system controller. Unsolicited periodic grants are granted by the system controller to each of the one or more remote terminals on a periodic basis without requiring a grant request from the one or more remote terminals. Solicited dynamic requests are dynamically allocated to a remote terminal that requests the grant. Remote terminals request dynamically allocated grants if the data available for transmission from the remote terminals exceeds the bandwidth allocated by the unsolicited periodic grants. Requests for dynamically allocated grants request bandwidth substantially equal to this excess bandwidth and are included (i.e., piggybacked) along with data transmitted in response to unsolicited periodic grants. The present invention also includes a method for dynamically adjusting the size of the unsolicited periodic grants.

Claims 1-5 and 8-9 of the present invention are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,751,708 to Eng et al. (hereinafter "Eng"). These claims include features that are not disclosed, taught, or suggested by Eng and, therefore, applicant respectfully traverses this rejection. In particular Eng does not disclose or suggest:

... determining whether the bandwidth size of a data packet of a stream of packets to be transmitted from the at least one remote terminal through the upstream channel is greater than the size of the periodically allocated grant, and, if so;

requesting the dynamically allocated grant, the requested dynamically allocated grant being of a bandwidth size equivalent to the bandwidth size by which the data packet exceeds the size of the periodically allocated grant;

transmitting a first portion of the data packet in response to the periodically allocated grant along with the dynamically allocated grant request; and

transmitting a remaining portion of the data packet in response to a next available grant.

Appln. No.: 09/610,269  
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MATI-193US

as set forth in claim 1. This claim requires a determination of whether the bandwidth size of a data packet is greater than the size of a periodically allocated grant, requesting a dynamically allocated grant for excess bandwidth needed to transmit the data packet, transmitting a first portion in response to the periodically allocated grant, and transmitting a remaining portion in a next available grant.

Eng discloses a data transmission method that allocates bandwidth for the transfer of data from a remote terminal (end-user) to a communication network in response to requests by the remote terminal. Data arriving at the remote terminal is placed in a buffer for transmission to the network. The remote terminal then sends an access request to a controller requesting access to the network. The controller acknowledges the request and grants bandwidth to the remote terminal to transmit the data. If the contents of the buffer exceed the size of the granted bandwidth, the remote terminal includes (piggybacks) another grant request along with the data being transmitted using the granted bandwidth.

Eng, however, does not disclose periodically allocated grants or dynamically allocated grants being of a bandwidth size equivalent to the bandwidth size by which the data packet exceeds the size of a periodically allocated grant. In rejecting claim 1, the Examiner states that Eng "discloses a method of transmitting data packets from an end-user device or remote terminal to a common system controller/scheduler through the use of periodically allocated grants by the system controller." A careful reading of Eng, however, reveals that Eng is devoid of any teaching or suggestion of periodically allocated grants. Periodically allocated grants are grants made by a controller to a remote terminal on a periodic basis without requiring a request for access from the remote terminal. In Eng, on the other hand, all grants are made in response to an access request from the end-user (remote terminal). See column 6, line 37 through column 7, line 17 and FIG. 5 of Eng. Thus, Eng does not disclose periodically allocated grants are recited in independent claim 1.

The Examiner further suggests that Eng discloses dynamically allocated grants being of a bandwidth size equivalent to the bandwidth size by which the data packet exceeds the size of the periodically allocated grant. In support of this assertion, the Examiner states the "request for a dynamically allocated grant communicates the size of the data remaining in the buffer ... , so the transmission of the remaining portion of data can be completed in response to the

Appln. No.: 09/610,269  
Amendment Dated November 13, 2003  
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MATI-193US

allocation request," citing column 7, lines 27-30 of Eng. Eng, however, does not teach or suggest dynamically allocated grants being of a bandwidth size equivalent to the bandwidth size by which the data packet exceeds the size of the periodically allocated grant. First, as discussed above, Eng does not teach or suggest the use of periodically allocated grants. Second, Eng does not teach dynamic allocation of a bandwidth size equal to the bandwidth size by which the data packet exceeds the size of the periodically allocated grant. In the portion of Eng cited by the Examiner, a piggybacked request for data indicates the number of packets remaining in a buffer located at the remote terminal. A controller may then issue multiple grants to accommodate the remaining data. Eng, however, is devoid of any teaching or suggestion of varying the bandwidth size granted by the controller to equal the bandwidth size by which the data packet exceeds the size of a previous grant. Thus, Eng does not disclose dynamically allocated grants being of a bandwidth size equivalent to the bandwidth size by which the data packet exceeds the size of the periodically allocated grant as recited in claim 1.

These limitations enable high utilization of the periodically allocated grants, low latency for the dynamically allocated grants, and overall improved channel utilization. See page 12, lines 5-13.

Because Eng does not disclose, teach, or suggest periodically allocated grants or dynamically allocated grants being of a bandwidth size equivalent to the bandwidth size by which the data packet exceeds the size of a periodically allocated grant, Eng does not disclose, teach, or suggest each of every limitation of independent claim 1. Accordingly, the rejection of claim 1 is improper and should be withdrawn.

Claims 2-5 and 8-9 depend from claim 1 and, therefore, contain all the limitations thereof are patentable for at least the reason that claim 1 is patentable. Accordingly, the Examiner's rejection of claims 2-5 and 8-9 should be withdrawn for at least this reason.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng in view of U.S. Patent No. 5,751,708 to Lakshman et al. (hereinafter "Lakshman"). Claims 6 and 7 depend from claim 1 and, therefore, include all of the limitations thereof. The addition of Lakshman does not address all the deficiencies of Eng with respect to claim 1. Specifically, Lakshman does not disclose, teach, or suggest dynamically allocated grants being of a bandwidth size equivalent to the bandwidth size by which the data packet exceeds the size of a

Appln. No.: 09/610,269  
Amendment Dated November 13, 2003  
Reply to Office Action of August 14, 2003

MATI-193US

periodically allocated grant. Thus, claims 6 and 7 are patentable for at least the reason that claim 1 is patentable. Accordingly, the rejection of claims 6 and 7 should be withdrawn.

Claim 17 is rejected under 35 U.S.C. §112, 1<sup>st</sup> ¶, as failing to comply with the enablement requirement. The Examiner asserts that the "specification does not clearly describe how the measurement-based UGPRS unsolicited channel allocation is calculated." The examiner then clarifies this rejection, with reference to Fig. 9, stating "it is not sufficiently described how the new UGS grant size is calculated using the increase and decrease constants obtained in steps 6 and 7." The examiner is directed to page 13 lines 1-16 of the application as filed for a description of the calculation of a new unsolicited grant service (UGS), i.e., periodically allocated grant. This section of the specification and Fig. 9 clearly teach that a new UGS is calculated when the average of unused UGS bytes is greater than a threshold value, and the UGS grant size is changed by the difference between a rate increase constant times an average piggyback request size (step 7) and a rate decrease constant times average unused bytes (step 6). When the value calculated in step 7 exceeds the value calculated in step 6, the UGS grant size is increased. On the other hand, if the value calculated in step 6 exceeds the value calculated in step 7, the UGS grant size is decreased. Accordingly, the specification clearly describes how the measurement-based UGPRS unsolicited channel allocation is calculated and, therefore, the rejection of claim 17 on this ground should be withdrawn.

Furthermore, the Examiner states that the reference by claim 17 to "at least two predetermined thresholds" is not consistent with Fig. 9, where only one threshold is shown." The applicant amends claim 17 to replace "at least two predetermined thresholds" with "at least one predetermined threshold," in accordance with what is depicted in Fig. 9. Also, the applicant amends the specification for consistency with Fig. 9 and to recite "[w]hile one threshold is used for the comparison, generally, any number of threshold comparisons may be performed." Support for the amendment to claim 17 is found in Fig. 9 and at page 13, lines 1-16 of the application as originally filed and support for the amendment to the specifications is found in Fig. 9 and the general acknowledgement that one or more thresholds may typically be employed instead of one threshold. No new matter is added. Accordingly, the rejection of claim 17 on this ground should be withdrawn.

Additionally, the examiner states that the nature of the predetermined thresholds and what they represent are not described. The examiner is directed to Fig. 9 and page 13, lines 1-

Page 11 of 12

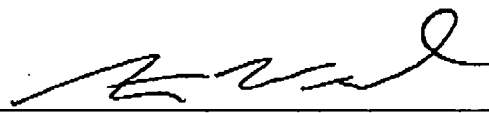
Appln. No.: 09/610,269  
Amendment Dated November 13, 2003  
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MATI-193US

16 of the application for a description of the at least one threshold and what it represents. The at least one threshold is a value to which an average unused unsolicited grant service (UGS), i.e., periodically allocated grants, is compared (step 5). If the unused UGS is greater than the threshold value, processing proceeds in parallel through steps 6 and 7 and a new UGS grant size is calculated at step 8. If the unused UGS is less than the threshold value, processing proceeds at to step 2 without calculating a new UGS grant size. The selection of an appropriate threshold value for comparison will be understood by one of skill in the art. Thus, the nature of the predetermined threshold and what it represents is described. Accordingly, the rejection of claim 17 on this ground should be withdrawn.

In view of the amendments and remarks set forth above, the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,

  
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Dated: November 13, 2003

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November 13, 2003

  
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